

# Pain Relief Connection

The Pain Information Newsletter

Provided by MGH Cares About Pain Relief



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## Clinical Focus: Ten Guidelines for Assessing and Treating Pain

This is the 6th in a series on the principles and guidelines for pain management.

### 6. Address common misconceptions about tolerance and addiction to opioids.

A major barrier—perhaps the most important barrier—to effective and consistent approaches to pain relief is widespread misconceptions about opioids. These misconceptions lead to fear and prejudice throughout our society. They interfere with the ability of clinicians to provide appropriate care, and contribute to distrust and non-adherence to treatment on the part of patients.

- Opioids are very safe and effective when used appropriately.
- People who take opioids as medication to relieve pain do not become addicted.
- Addiction is a psychological condition that, like an eating disorder, has a physical component. Addiction to opioids in the general population is very low, approximately 1% of all Americans over the age of 12. Studies of people who have been prescribed opioids for pain show that considerably less than 1% become addicted.
- A far more likely problem is that in the health care setting a patient's pain will be under treated due to withholding of or inappropriate prescribing of opioids. Ironically, this can lead to "drug-seeking behavior," more likely a sign of inadequate analgesia than of addiction.

In 2001 the [American Pain Society](#), the [American Society of Addiction Medicine](#), and the [American Academy of Pain Medicine](#) developed a [consensus statement](#) on definitions of addiction, dependence, and tolerance that are adapted below. *Please note that development of tolerance and/or dependence are not symptoms of nor risk factors for addiction.*

- ADDICTION is a primary, chronic, neurobiologic disease. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use for effects other than pain relief, continued use despite harm, and craving. (Patients with a history of addiction who have pain can be successfully treated with opioids, a controversial topic to be discussed in a future issue)
- Physical DEPENDENCE is a state of adaptation that is manifested by a withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, and/or administration of an antagonist. (Dependence can develop in about 7 days. When reducing doses in a person who has developed dependence, reduce by no more than 25% per day to avoid withdrawal syndrome.)
- TOLERANCE is a state of adaptation in which exposure to a drug induces changes that result in a diminution of one or more of the drug's effects over time. (Tolerance is quite variable from patient to patient. One should suspect disease progression or acute psychosocial stress as well as tolerance if the need for analgesics suddenly increases.)

Don't let fears of opioid addiction deprive patients of important drugs that can help them live well: educate patients, families, and colleagues about common, inappropriate, fears and misunderstandings.

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## In the News

Last week a “State of the Science” conference focusing on cancer pain, fatigue, and depression was held at the National Institutes of Health. Speakers included Donna Greenberg, MD of the MGH Psychiatry Service. The panel concluded that there is insufficient assessment and treatment of all three symptoms. A [draft consensus statement](#) is available online. It is generally 2 – 4 months between draft and final release.

[MassGeneral Hospital for Children](#) has embarked on an ambitious campaign to make this a “pain free” environment for children. A multidisciplinary group of clinicians, educators, and administrators have begun meeting to plan strategy; a physician member is still being sought. A pediatric team will be attending the [4th Biennial Forum on Pediatric Pain](#). The Hospital’s pediatric [pain booklet](#) is online.

## Eavesdropping

In the current issue (July 18) of [Caring Headlines](#), Jeanette Ives Erickson’s [column](#) is devoted to an interview with Joan Fitzmaurice on drug diversion. (Accessible from MGH computers, only.)

## Education

**Free** (for a limited time): Online CE offerings on [constipation](#), [pain](#), and other cancer symptoms at [CancerSourceRN.com](#). Free registration on the site is required to access the CE modules. Cost for contact hours is usually \$10 – 14 per offering.

August 21-25 (Weds – Sat): **Advanced Training in Pediatric End-of-Life Care:** The University of New England (Portland, ME) has partnered with the [Jason Program](#) to sponsor a five-day workshop series that will cover a variety of topics related to the unique skills necessary to providing quality care and support to terminally ill children, their families and caregivers. For more information, Phone: 207-797-7688, ext. 4412; Fax: 207-878-4891; email: oce@une.edu

September 19 – 22 (Thurs – Sun): [4th Biennial Forum on Pediatric Pain, The Context of Pediatric Pain: Biology, Family, Society, Culture:](#) White Point Beach Resort, Nova Scotia, Canada. Additional information is available on their web site or by calling 902-453-4664.

October 3-5 (Thurs – Sat) (Please note that this reflects a schedule change): **New England Conference on Pediatric Hospice:** Sponsored by the [Jason Program](#), dedicated to the care of seriously ill and dying children. An annual multidisciplinary conference. Register online, or print registration form to mail or fax. Phone number for more information: (207) 283-0170 ext 2589.

## MGH Pain Calendar:

Educational Offerings and Events Calendar of The Center for Clinical and Professional Development is now available [online](#).

November 15 (Fri) 8:00am – 11:00am; repeated 12:00N – 3:00pm: [Care of the Patient at the End of Life: Clinical and Ethical Considerations](#). Pre-register by calling the Center for Clinical and Professional development at 617-726-3111. Location: Charles River Plaza, 185 Cambridge Street, 2<sup>nd</sup> floor Room 105.

URL notes: **Hold your cursor over the link for a second to see the URL.** If you are reading this in hard copy, this month’s links are:  
Constipation CE offering: <http://www.cancersourcern.com/Nursing/CE/CECourse.cfm?courseid=71&contentid=21082>  
Pain CE offering: <http://www.cancersourcern.com/Nursing/CE/CECourse.cfm?courseid=48&contentid=18989>  
CancerSourceRN.com: <http://www.cancersourcern.com>  
Jason Program: <http://www.jasonprogram.org>  
4<sup>th</sup> Biennial Forum on Pediatric Pain: <http://www.pediatric-pain.ca/ifpp>  
Center for Clinical & Professional Development:  
<http://pcs.mgh.harvard.edu/CCPD/CCPDframe/page%20descriptions/CCPD%20Offerings%20Home%20Page.htm>  
American Pain Society: <http://www.ampainsoc.org>;  
American Society of Addiction Medicine: <http://www.asam.org>  
American Academy of Pain Medicine: <http://www.painmed.org>  
APS/ASAM/AAPM Consensus Statement: <http://www.painmed.org/productpub/statements/pdfs/definition.pdf>  
*Caring Headlines:* [http://pcs.mgh.harvard.edu/Caring\\_Headlines/caringDir.htm](http://pcs.mgh.harvard.edu/Caring_Headlines/caringDir.htm)  
MassGeneral Hospital for Children: <http://www.mgh.harvard.edu/children/home.html>  
Pediatric pain booklet: <http://www.mgh.harvard.edu/children/family/resources/pain.html>  
NIH draft consensus statement on pain, fatigue, and depression: [http://consensus.nih.gov/ta/022/022\\_intro.htm](http://consensus.nih.gov/ta/022/022_intro.htm)

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# PAIN TOPICS

## Converting Opioid Analgesics, Part II: Review of Equianalgesic Conversion Calculators

Thomas E. Quinn, MSN, RN, AOCN

**Editor's Note:** Part I of "Converting Opioid Analgesics" appeared in [Pain Relief Connection Vol 1 # 6, June 18, 2002](#), page 3. Readers are invited to submit PAIN TOPICS articles, as well as suggestions for future columns to [PainRelief@Partners.org](mailto:PainRelief@Partners.org).

In [Part I](#) of "Converting Opioid Analgesics" we discussed and practiced using equianalgesic tables. As noted there however, even when consistently using an equianalgesic table and simple formulae you still have to "do the math." In Part II we review the available equianalgesic conversion calculators.

There are five calculators currently available via the World Wide Web; I am unaware of any other sources. There are dramatic differences in cost, quality, complexity, and features among the 5. For example, 3 of the 5 provide for transdermal fentanyl conversions; only one provides for intrathecal conversions; one permits the user to choose the equianalgesic table upon which calculations are based; one calculates dose conversions with or without a reduction for incomplete cross tolerance; two are available for Palm operating system (Palm OS) handhelds; two display the actual conversion table. None of the calculators have all of these features, and all of them miss a few that seem important to me.

### 1. [MedCalc](#)

This calculator is the least clinically useful of those reviewed.

- ↓ Inconsistent use of generic and brand names.
- ↓ Dangerously confusing when the brand name for fentanyl is listed as Duragesic, yet the duration of analgesia is listed as 1- 2 hours, route is IV/IM and dosing is only available in mg, and not mcg. There is a similar mislabeling problem with oxycodone/Oxycontin.
- ↓ Only one drug may be converted at a time, so that if the patient is on more than one opioid, calculations by hand are still required.
- ↓ No other information or warnings are included—this is just a calculator.
- ↓↑ Opioids not commonly used in cancer or chronic pain management, such as opioid agonists/antagonists are included in the drug list, but combination products are not acknowledged.
- The morphine IV:PO ratio is 1:6, appropriate for opioid naïve patients, but other calculators use 1:3, more appropriate for prolonged use.
- ↑ Content source is listed: Tarascon Pocket Pharmacopoeia
- ↑ When a drug is selected only appropriate routes are displayed
- ↑ Cost: Free on the web

### 2. [PalmSTAT](#)

As the name suggests, this calculator was designed for the Palm OS. It is available for download from the Palm web site. There is no PC-based version. The calculator is easy to use but is very limited in drug and dose selection. The calculator is [reviewed](#) on the End of Life Physician Education Resource Center ([EPEC](#)) web site (free registration required).

- ↓ Percocet and Tylenol #3 are considered as the same drug for purposes of calculation—not an egregious error, but sloppy programming. It should have been easy to enter another line or two of code for the second drug. More importantly, the calculator has not kept up with the fact that there are now 4 dose levels of Percocet available.

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- ↓ Only a handful of drugs and formulations are available in the calculator. For example, the only oral morphine is MS Contin, there is no oral Dilaudid or hydrocodone, and parenteral morphine and Dilaudid are only offered as continuous infusion.
- ↓ Only brand names are used (except for morphine).
- ↓ Only one drug may be converted at a time, so that if the patient is on more than one opioid, calculations by hand are still required.
- ↑ Helpful information about management is included with the calculation. For example, there is a warning not to use Demerol chronically, and breakthrough doses are recommended.
- ↓ Content source is not listed
- ↑ Cost: \$20 after a free trial period

### 3. [GlobalRPh](#)

This calculator is available free on the web and for a token price may be installed on a PC. A second calculator, available only on the web, is available for transdermal fentanyl conversions.

- ↓ Only one drug may be converted at a time, so that if the patient is on more than one opioid, calculations by hand are still required.
- ↓↑ The equianalgesic table upon which calculations are based is displayed, but there are inconsistencies in the design of the table vs the calculator. For example, for parenteral doses the table displays IM doses, the calculator displays IM/SC; neither uses IV.
- ↑ A unique feature is the inclusion of half-life in the table.
- ↓ Content source is not listed
- ↓ Has propoxyphene in the table, but not the calculator.
- ↓ There is nothing in the main calculator to tell the user that a separate transdermal fentanyl calculator is available.
- ↓↑ There are links available for additional pain management information, but some of them don't work—indicating that the site is not well maintained.
- All dosing is in 24 hour equivalents
- ↑ Cost: free on the web, \$10/year to download to a PC.

#### [GlobalRPh \(transdermal fentanyl\)](#)

Has table which author says is “roughly” based on manufacturer data and calculates a “conservative estimate.”

- ↓↑ Equivalencies in the table are provided in ranges, but the calculator gives a discreet value, presumably the “conservative estimate.” User must then round in 25 mcg increments.
- ↑ Recommends having PRN medication available for breakthrough pain and to anticipate needing a higher-than-initial patch strength when pain stabilizes.
- ↓ Confusing use of decimal spaces that is clinically irrelevant. Should round to whole mg or mcg amounts.
- ↑ Cost: free on the web

### 4. [Talaria](#)

Talaria is the oldest of the web-based calculators. The updated version is reviewed, though the [first version](#) is still available. It was originally designed to support the AHCPR cancer pain guidelines. It has since added the American Pain Society equianalgesic table, which is slightly different.

- ↑ Lets the user specify the AHCPR or APS table for use in calculations.
- Until a different drug is selected all conversions default to the equianalgesic dose of parenteral morphine

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- ↓↑ Contains a table showing the dose ratio of all drugs to the equianalgesic dose of morphine. This should be useful, but the ratios in some cases are carried to 8 decimal places. Those that don't have multiple decimal places inexplicably have a trailing zero to the right of the decimal. This is considered poor practice in today's environment of error prevention.
- ↓↑ For new users, a "calculator tour" is available, but it doesn't work very well
- ↓ Another confusing feature is that the current drug (the one that is to be converted) is referred to as the "proposed drug" and the drug selection window instructs you to "select a new drug."
- ↑ Several concurrent opioids can be entered for conversion to a single alternative agent.
- ↑ Current PRN medications can be included, but the estimated 24 hour intake must be entered.
- ↑ Cost: free on the web

## 5. [Cynergy Group](#)

This calculator is the most complete and the most professional-looking of those reviewed. It was developed by Stuart DuPen, MD a well known anesthesiologist and pain management specialist who invented the implanted DuPen epidural catheter. His wife, Anna DuPen, ARNP, a pain management nurse, collaborated in the development of the product. It has more features than the others reviewed, yet remains relatively easy to use. Web, PC, institutional network ("site"), and Palm OS versions are available. The calculator is [reviewed](#) on the End of Life Physician Education Resource Center ([EPECRC](#)) web site (free registration required).

- ↑ Several concurrent opioids can be entered for conversion to a single alternative agent.
- ↑ Current PRN medications can be included, but the estimated 24 hour intake must be entered.
- ↑ A preplanned titration schedule, based on percentage of current dose, can be calculated
- ↑ Displayed conversion values include a dose reduction to account for incomplete cross-tolerance; the user can choose a straight conversion without the recommended reduction.
- ↑ When a route is selected only appropriate drugs are displayed
- ↑ Easy-to-follow written instructions for each version may be viewed on-screen or printed out.
- ↓↑ References are listed in a bibliography, but it is unclear what the source of any one conversion may be.
- ↓ For the web version, there is an annoying time-out feature, the length of which is not controllable by the user.
- ↑ The drug list includes a complete listing of combination products
- ↑ When acetaminophen-containing combination products are entered, daily acetaminophen doses are automatically calculated and displayed; high daily doses also produce a warning.
- ↓↑ There are warnings that meperidine and propoxyphene are not recommended for chronic use, but the calculator assumes chronic use and will not provide a conversion.
- A well-organized report on each conversion may be printed out; in some settings this report could be entered into the patient record as partial documentation of the pain management regimen.
- ↑ Routes not specified by any of the other calculators are provided: epidural, intrathecal, rectal, transmucosal.
- ↑ Having a PC and hand-held version of the same calculator is a significant advantage in a large practice or institutional setting. Not only does it address the differing hardware and style preferences of potential users, but should produce consistent results—a critical practice and safety element.
- ↓↑ Cost: for a limited time there is a 30-day free trial period; the site version has a 90-day free trial. The pricing structure has changed at least twice in the past year. Prices are per year: Palm OS \$99; on-line annual subscription \$299; stand-alone PC \$149; site version (unlimited users; includes 20 Palm OS licenses) \$3295.

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## Summary

The Cynergy Group calculator is the best of those available. It is easy to use, provides clinically relevant calculations for a large number of opioids, provides relevant warnings and information, and minimizes the mental and paper-pencil calculations that must be done. What would make it (and the others) better?

- In an institutional setting, similar calculators should be incorporated into prescriber order entry (POE) systems
- Short of that, a longitudinal patient record of pain management prescriptions would be extremely useful
- Include all opioids and NSAIDs for which published conversions are available
- Make clear the source of all conversion factors
- Permit the user to substitute conversion factors that are more clinically relevant for a particular setting or patient
- Permit the user to adjust the percent reduction for cross-tolerance
- Permit the user to reduce clutter by “hiding” drugs that are not used in a particular practice
- Some drugs (morphine, levorphanol, methadone) have different published equivalencies for acute vs chronic use—none of the extant calculators take this into consideration
- Recommend a drug and dose for breakthrough pain
- Let the prescriber (not the software) decide if “not recommended” drugs will be used in a particular case
- Consideration for pediatric dosing should be incorporated
- Dose adjustment recommendations for those with impaired hepatic or renal function should be incorporated

A comment in the EPERC review of the PalmSTAT calculator can be applied to all equianalgesic dosing tools: “a physician or nurse needs to have a good understanding of pain management and equianalgesic conversions before using this tool. This tool should not replace the need for education in the area of equianalgesic dosing.” On the other hand, I must take issue with the reviewer of the Cynergy Group calculator who suggested that “inexperienced users may not use this enough to justify the cost of the program, experienced users probably don't need it.” David W. Bates, MD, of Brigham and Women's Hospital, and others have provided ample evidence that POE increases the quality of care and decreases the risk of errors in medication prescribing and management. Even if these stand-alone calculators do not rise to the level of POE, they are a major conceptual step in the right direction and should be used even by “experienced” practitioners. In addition, they provide additional training opportunities for all clinicians as well as promote standardization and consistency within an institution.

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Part I of Converting Opioid Analgesics: [http://www.massgeneral.org/painrelief/prcvol1\\_6.PDF](http://www.massgeneral.org/painrelief/prcvol1_6.PDF)  
MedCalc: <http://www.medcalc.com/narcotics.html>  
PainSTAT: <http://palmcomputing.palmgear.com/palm/product.cfm?prodID=12486>  
PainSTAT review: [http://www.eperc.mcw.edu/edматы/detail.cfm?matl\\_id=312&query\\_id=14252&srchType=resource&secSrchType=search&sesn\\_id=5411596935516430464187717](http://www.eperc.mcw.edu/edматы/detail.cfm?matl_id=312&query_id=14252&srchType=resource&secSrchType=search&sesn_id=5411596935516430464187717)  
GlobalRPh: <http://www.globalrph.com/narcoticonv.htm>  
GlobalRPh (TF): <http://www.globalrph.com/fentconv.htm>  
Talaria (V2.0): <http://www.talaria.org/calculatorJ20.html>  
Talaria (V1.5): <http://www.talaria.org/calculatorJ15.html>  
Cynergy Group: <http://www.cynergygroup.com>  
Cynergy Group review: [http://www.eperc.mcw.edu/edматы/detail.cfm?matl\\_id=272&query\\_id=14249&srchType=resource&secSrchType=search&sesn\\_id=5411596935516430464187717](http://www.eperc.mcw.edu/edматы/detail.cfm?matl_id=272&query_id=14249&srchType=resource&secSrchType=search&sesn_id=5411596935516430464187717)  
EPERC: <http://www.eperc.mcw.edu>

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